

Application No. 09/889,860

Filed: July 23, 2001

Group Art Unit: 1733

AMENDMENTS TO THE CLAIMS

Please amend the claims to read as follows:

1. (Currently Amended) A method of manufacturing a bowl of thermostructural composite material formed by fiber reinforcement densified by a matrix, the method ~~being characterized in that comprises the steps consisting in~~ comprising:

making a bowl preform by winding a yarn, the preform having an axial passage through its bottom;

densifying the bowl preform by chemical vapor infiltration;
and

closing the passage by means of a plug made of thermostructural composite material.

2. (Original) A method according to claim 1, characterized in that a consolidated bowl preform is made prior to chemical vapor infiltration.

3. (Previously Amended) A method according to claim 1, characterized in that the consolidated bowl preform is made by winding a yarn impregnated by a precursor for said material

Application No. 09/889,860

Filed: July 23, 2001

Group Art Unit: 1733

constituting the matrix, and by transforming the precursor by heat treatment.

4. (Previously Amended) A method according to claim 3, characterized in that the consolidated bowl preform is made by winding a yarn impregnated by a carbon precursor and by transforming the precursor.

5. (Currently Amended) A method according to claim 4, characterized in that the carbon precursor is selected from ~~phenolic~~, furan, epoxy, and polyimide resins.

6. (Previously Amended) A method according to claim 3, characterized in that two consolidated preforms are made simultaneously by winding a shape on a mandrel where the shape corresponds to that of two bowl outline portions joined rim-to-rim, and by cutting the resulting winding in its middle portion.

7. (Previously Amended) A method according to claim 1, characterized in that the bowl preform is made from yarn that has no surface treatment to provide surface functions.

Application No. 09/889,860

Filed: July 23, 2001

Group Art Unit: 1733

8. (Previously Amended) A method according to claim 1, characterized in that the bowl preform is made from a carbon yarn.

9. (Previously Amended) A method according to claim 1, characterized in that the bowl is subjected to high temperature purification and stabilization treatment.

10. (Previously Amended) A method according to claim 1, characterized in that the high temperature purification and stabilization treatment is performed on the consolidated bowl preform.

11. (Previously Amended) A method according to claim 9, characterized in that the purification and stabilization treatment is performed at a temperature greater than 2200°C.

12. (Previously Amended) A method according to claim 1, characterized in that bowl preform densification is performed by forming a carbon matrix.

13. (Previously Amended) A method according to claim 1, characterized in that the plug is made in two pieces that are

Application No. 09/889,860

Filed: July 23, 2001

Group Art Unit: 1733

assembled together so as to clamp onto the rim of the axial passage in the preform.

14. (Cancelled)

15. (Previously Amended) A method according to claim 1, characterized in that it includes a step consisting in performing a final chemical vapor infiltration step after the passage has been closed by the plug.

16. (Original) A method according to claim 15, characterized in that the final chemical vapor infiltration step comprises forming a ceramic matrix phase.

17. (Currently Amended) A method according to claim 16, characterized in that the ceramic matrix ~~phase is~~ phase is made of silicon carbide.

18. (Previously Amended) A method according to claim 1, characterized in that a protective coating is formed at least on the inside face of the bowl.

Application No. 09/889,860

Filed: July 23, 2001

Group Art Unit: 1733

19. (Original) A method according to claim 18, characterized in that a protective coating is made out of pyrolytic carbon.

20. (Original) A method according to claim 18, characterized in that a protective coating is made out of silicon carbide.

21. (Previously Amended) A method according to claim 1, characterized in that the inside face of the bowl is provided with a protective layer.

22. (Original) A method according to claim 21, characterized in that the protective layer is made of a thermostructural composite material.

23. (Currently Amended) A method according to claim 22, characterized in that a plurality of consolidated bowl preforms ~~are~~is densified simultaneously by chemical vapor infiltration.

24. (Currently Amended) A method according to claim 2, characterized in that:

the consolidated bowl preform is made by winding a yarn impregnated by a carbon precursor selected from phenolic, furan,

Application No. 09/889,860
Filed: July 23, 2001
Group Art Unit: 1733

epoxy, and polyimide resins for said material constituting the matrix, and by transforming the precursor by heat treatment;

two consolidated preforms are made simultaneously by winding a shape on a mandrel where the shape corresponds to that of two bowl outline portions joined rim-to-rim, and by cutting the resulting winding in its middle portion;

the bowl preform is made from yarn that has no surface treatment to provide surface functions;

the bowl preform is made from a carbon yarn;

the bowl is subjected to high temperature purification and stabilization treatment;

the high temperature purification and stabilization treatment is performed on the consolidated bowl preform;

the purification and stabilization treatment is performed at a temperature greater than 2200°C;

bowl preform densification is performed by forming a carbon matrix;

the plug is made in two pieces that are assembled together so as to clamp onto the rim of the axial passage in the preform;

the passage is closed by a plug made of thermostructural composite material;

Application No. 09/889,860

Filed: July 23, 2001

Group Art Unit: 1733

it includes a step consisting in performing a final chemical vapor infiltration step after the passage has been closed by the plug;

the final chemical vapor infiltration step comprises forming a ceramic matrix phase;

the ceramic matrix phase is made of silicon carbide;

a protective coating is formed at least on the inside face of the bowl;

a protective coating is made out of pyrolytic carbon or silicon carbide;

the inside face of the bowl is provided with a protective layer;

the protective layer is made of a thermostuctural composite material; and

a plurality of consolidated bowl preforms ~~are~~ is densified simultaneously by chemical vapor infiltration.

25. (New) A method according to claim 4, characterized in that the carbon precursor comprises a phenolic resin.

26. (New) A method according to claim 1, wherein, in the step of densifying the bowl preform by chemical vapor infiltration,

Application No. 09/889,860

Filed: July 23, 2001

Group Art Unit: 1733

resistance of the densified bowl preform to corrosion by silicon oxide is increased.

27. (New) A method according to claim 15, wherein, in the step of performing a final chemical vapor infiltration, resistance of the bowl preform to corrosion by silicon oxide is increased.